

Tirzepatide and Injectable Semaglutide Correlated with Greatest Weight Loss Among GLP-1 Medications

Team A: Kersten Bartelt, RN; Joe Deckert, PhD

Team B: Dave Little, MD; Brendan Joyce

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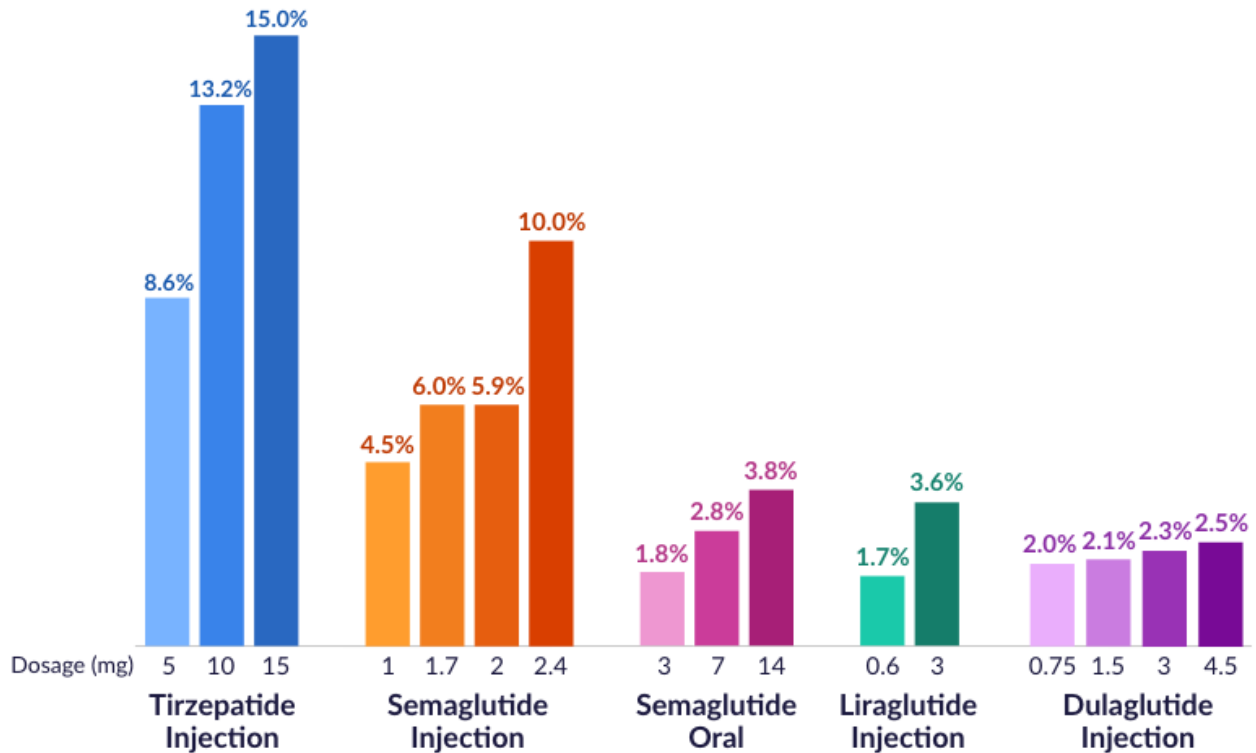
Key Findings:

- After one year of treatment, patients on any dosage of tirzepatide or injectable semaglutide experienced greater median weight loss than those on any dosage of liraglutide, dulaglutide, or oral semaglutide.
- Patients on tirzepatide lost the greatest percentage of weight compared to all other GLP-1 medications studied. Patients on 10 mg and 15 mg of tirzepatide experienced a median weight loss of 13.2% and 15%, respectively.

In a [previous study](#), we found that patients on injectable semaglutide at the recommended weight loss dosage (2.4mg) for 60 weeks achieved an 8-11% reduction of their starting weight.¹ Two other glucagon-like peptide-1 receptor agonist (GLP-1) medications, tirzepatide and liraglutide, have also been approved for weight loss by the FDA.^{2,3}

To better understand how different GLP-1 medications, routes, and dosages might influence weight change, we studied 413,557 patients who were prescribed tirzepatide, liraglutide, dulaglutide, or injectable or oral semaglutide for a minimum of 180 days. We stratified patients by the peak dosage of the medication prescribed within the year of GLP-1 treatment to determine how dosage might influence the amount of weight loss experienced. We found that higher dosages of all GLP-1 medications studied were associated with greater median weight loss a year after starting the medication, as seen in Figure 1. Patients on tirzepatide experienced greater weight loss than those on liraglutide, dulaglutide, oral semaglutide, and all but the highest dose of injectable semaglutide. Patients on injectable semaglutide achieved greater median weight loss than patients prescribed oral semaglutide.

Median Weight Loss After One Year by Peak Dosage



N=413,557 patients

"Median Weight Loss After One Year by Peak Dosage," 2024. EpicResearch.org

Figure 1. Patients' median weight loss by the peak dosage of the GLP-1 receptor agonist prescribed within the year of starting it.

The study population includes both diabetic and non-diabetic patients. Some of the medications and dosages studied, including oral semaglutide, dulaglutide, the 0.6 mg dosage of liraglutide, and the 1 mg and 2 mg dosages of injectable semaglutide, have not been approved by the FDA for the treatment of obesity.^{1,2,3} As such, the patients prescribed these medications are much more likely to have been prescribed these medications for diabetes management compared to the patients prescribed the medications and dosages approved for weight loss. This may explain some of the differences observed in the median percentage of weight loss seen across the different medications and dosages.

These data come from Cosmos, a collaboration of Epic health systems representing more than 238 million patient records from 1,345 hospitals and more than 28,975 clinics from all 50 states and Lebanon. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions. Graphics by Kayla Monnette.

References

1. Little D, Deckert J, Bartelt K, Ganesh M, Stamp T. Weight Change with Semaglutide. Epic Research. <https://epicresearch.org/articles/diabetes-drug-helps-with-weight-loss-in-both-diabetics-and-non-diabetics>. Accessed March 6, 2024.
2. FDA Approves New Medication for Chronic Weight Management. U.S. Food and Drug Administration. Published November 8, 2023. <https://www.fda.gov/news-events/press-announcements/fda-approves-new-medication-chronic-weight-management>. Accessed March 6, 2024.

3. FDA Approves Weight Management Drug for Patients Aged 12 and Older. U.S Food and Drug Administration. Published December 4, 2020. [FDA approves weight management drug for patients aged 12 and older | FDA](#). Accessed March 6, 2024.

Data Definitions

Term	Definition
Study period	1/1/2017 – 11/30/2023
Study population	Patient who met both of the following criteria were included: A continuous GLP-1 medication order for at least 180 days A pre-treatment weight value There must also be two more readings in the year prior to the start that vary by no more than 10% of the average of those readings.
Estimated end of treatment date	The date represented by the end of treatment associated with the final order of a GLP-1 medication during the patient’s first period of GLP-1 treatment. This date is calculated based on the number of refills as (refills + 1) * 28 after the date the final order was placed.
Pre-treatment weight	The patient's average weight within the 30 days prior to and 3 days following the start of a GLP-1 medication.
Post-treatment weight	The patient's weight within 30 days following the estimated end of treatment date.
Pre-treatment BMI	The patient's BMI within the 30 days prior to and 3 days following the start of a GLP-1 medication.
GLP-1 medications	Any drug with one of the following pharmaceutical classes: ANTI-OBESITY GLUCAGON-LIKE PEPTIDE-1 RECEPT AGONIST ANTIHYPERGLY,INCRETIN MIMETIC(GLP-1 RECEPT.AGONIST) ANTIHYPERGLY,INCRETIN,LONG ACT-GLP-1 RECEPT.AGONIST
GLP-1 medications of interest	Medications identified by their simple generic names and routes: Semaglutide – Oral and injectable Liraglutide – Injectable Dulaglutide – Injectable Tirzepatide – Injectable The patient must reach one of the following peak dosages for the given drug they used during the treatment period: Injectable semaglutide: 1, 2, 1.7, or 2.4 mg Oral semaglutide: 3, 7, or 14 mg Injectable liraglutide: 0.6 or 3 mg Injectable dulaglutide: 0.75, 1.5, 3, or 4.5 mg Injectable tirzepatide: 5, 10, or 15 mg

Table 1: Patient Demographics by Medication and Dosage

		Subcutaneous Tirzepatide					
		5 mg		10mg		15mg	
Grouping	Group	n	%	n	%	n	%
Overall	Overall	4,681	100%	1,772	100%	791	100%
Sex	Female	3,326	71.1%	1,249	70.5%	568	71.8%
	Male	1,355	28.9%	523	29.5%	223	28.2%
Age Group	18-35	564	12.0%	240	13.5%	98	12.4%

	36-50	1,363	29.1%	602	34.0%	310	39.2%
	51-65	1,938	41.4%	699	39.4%	312	39.4%
	66-75	650	13.9%	201	11.3%	59	7.5%
	76-85	159	3.4%	28	1.6%	12	1.5%
	86+	<10	-	<10	-	<10	-
Race/ Ethnicity	White/ Non-hispanic	3,472	74.2%	1,340	75.6%	595	75.2%
	Black/ Non-hispanic	682	14.6%	270	15.2%	125	15.8%
	Hispanic or Latino	338	7.2%	101	5.7%	45	5.7%
	Other/ Non-hispanic	189	4.0%	61	3.4%	26	3.3%
Ruca Group	Rural	367	7.8%	131	7.4%	59	7.5%
	Urban	4,279	91.4%	1,632	92.1%	730	92.3%
BMI Group	Not Obese	663	14.2%	142	8.0%	61	7.7%
	Class 1	1,285	27.5%	412	23.3%	146	18.5%
	Class 2	1,085	23.2%	442	24.9%	196	24.8%
	Class 3	1,641	35.1%	776	43.8%	388	49.1%
Has Diabetes	Yes	2,718	58.1%	934	52.7%	383	48.4%
SVI - Household	[.0, .25]	1,000	21.4%	414	23.4%	186	23.5%
	[.25, .50]	1,173	25.1%	464	26.2%	234	29.6%
	[.50, .75]	1,204	25.7%	414	23.4%	176	22.3%
	[.75, 1.0]	1,252	26.7%	461	26.0%	189	23.9%
SVI - Transportation	[.0, .25]	741	15.8%	284	16.0%	144	18.2%
	[.25, .50]	1,081	23.1%	454	25.6%	195	24.7%
	[.50, .75]	1,325	28.3%	498	28.1%	240	30.3%
	[.75, 1.0]	1,482	31.7%	517	29.2%	206	26.0%
SVI - Minority Status	[.0, .25]	402	8.6%	171	9.7%	75	9.5%
	[.25, .50]	908	19.4%	350	19.8%	168	21.2%
	[.50, .75]	1,741	37.2%	681	38.4%	306	38.7%
	[.75, 1.0]	1,578	33.7%	551	31.1%	236	29.8%
SVI - Socioeconomic	[.0, .25]	1,123	24.0%	495	27.9%	218	27.6%
	[.25, .50]	1,103	23.6%	441	24.9%	201	25.4%
	[.50, .75]	1,284	27.4%	420	23.7%	219	27.7%
	[.75, 1.0]	1,119	23.9%	397	22.4%	147	18.6%

		Subcutaneous Semaglutide							
		1 mg		1.7 mg		2 mg		2.4 mg	
Grouping	Group	n	%	n	%	n	%	n	%
Overall	Overall	57,077	100%	4,036	100%	14,272	100%	7,587	100%
Sex	Female	36,192	63.4%	3,320	82.3%	9,372	65.7%	6,094	80.3%
	Male	20,885	36.6%	716	17.7%	4,900	34.3%	1,493	19.7%
Age Group	18-35	4,781	8.4%	772	19.1%	1,144	8.0%	1,355	17.9%

	36-50	14,452	25.3%	1,631	40.4%	3,841	26.9%	3,138	41.4%
	51-65	23,552	41.3%	1,407	34.9%	6,031	42.3%	2,736	36.1%
	66-75	11,469	20.1%	193	4.8%	2,739	19.2%	323	4.3%
	76-85	2,675	4.7%	30	0.7%	504	3.5%	34	0.4%
	86+	148	-	<10	-	13	0.1%	<10	-
Race/ Ethnicity	White/ Non-hispanic	39,617	69.4%	2,889	71.6%	10,022	70.2%	5,451	71.8%
	Black/ Non-hispanic	10,053	17.6%	672	16.7%	2,485	17.4%	1,299	17.1%
	Hispanic or Latino	4,884	8.6%	308	7.6%	1,214	8.5%	556	7.3%
	Other/ Non-hispanic	2,523	4.4%	167	4.1%	551	3.9%	281	3.7%
Ruca Group	Rural	4,008	7.0%	221	5.5%	997	7.0%	379	5.0%
	Urban	52,802	92.5%	3,790	93.9%	13,210	92.6%	7,184	94.7%
BMI Group	Not Obese	7,922	13.9%	274	6.8%	1,300	9.1%	462	6.1%
	Class 1	14,285	25.0%	994	24.6%	3,105	21.8%	1,820	24.0%
	Class 2	14,257	25.0%	1,143	28.3%	3,712	26.0%	2,061	27.2%
	Class 3	20,475	35.9%	1,614	40.0%	6,135	43.0%	3,232	42.6%
Has Diabetes	Yes	42,147	73.8%	579	14.3%	10,310	72.2%	1,116	14.7%
SVI - Household	[.0, .25]	13,784	24.1%	1,171	29.0%	3,440	24.1%	2,302	30.3%
	.[25, .50]	14,698	25.8%	1,049	26.0%	3,605	25.3%	2,034	26.8%
	.[50, .75]	14,069	24.6%	940	23.3%	3,516	24.6%	1,745	23.0%
	.[75, 1.0]	14,050	24.6%	837	20.7%	3,592	25.2%	1,451	19.1%
SVI - Transportation	[.0, .25]	8,477	14.9%	650	16.1%	2,170	15.2%	1,319	17.4%
	.[25, .50]	13,068	22.9%	984	24.4%	3,222	22.6%	1,851	24.4%
	.[50, .75]	16,348	28.6%	1,126	27.9%	4,030	28.2%	2,189	28.9%
	.[75, 1.0]	18,708	32.8%	1,237	30.6%	4,731	33.1%	2,173	28.6%
SVI - Minority Status	[.0, .25]	4,888	8.6%	333	8.3%	1,299	9.1%	664	8.8%
	.[25, .50]	10,561	18.5%	827	20.5%	2,580	18.1%	1,581	20.8%
	.[50, .75]	19,470	34.1%	1,352	33.5%	4,888	34.2%	2,655	35.0%
	.[75, 1.0]	21,682	38.0%	1,485	36.8%	5,386	37.7%	2,632	34.7%
SVI - Socioeconomic	[.0, .25]	14,940	26.2%	1,308	32.4%	3,761	26.4%	2,476	32.6%
	.[25, .50]	13,839	24.2%	1,032	25.6%	3,415	23.9%	1,920	25.3%
	.[50, .75]	14,405	25.2%	851	21.1%	3,660	25.6%	1,709	22.5%
	.[75, 1.0]	13,417	23.5%	806	20.0%	3,317	23.2%	1,427	18.8%

		Oral Semaglutide					
		3 mg		7 mg		14 mg	
Grouping	Group	n	%	n	Rate	n	%
Overall	Overall	11,056	100%	16,247	100%	7,328	100%
Sex	Female	6,617	59.8%	9,014	55.5%	3,671	50.1%
	Male	4,439	40.2%	7,233	44.5%	3,657	49.9%
Age Group	18-35	528	4.8%	715	4.4%	309	4.2%

	36-50	1,866	16.9%	2,750	16.9%	1,326	18.1%
	51-65	4,304	38.9%	6,853	42.2%	3,363	45.9%
	66-75	3,009	27.2%	4,312	26.5%	1,745	23.8%
	76-85	1,197	10.8%	1,465	9.0%	530	7.2%
	86+	152	1.4%	152	0.9%	55	0.8%
Race/ Ethnicity	White/ Non-hispanic	6,954	62.9%	10,171	62.6%	4,867	66.4%
	Black/ Non-hispanic	2,264	20.5%	3,233	19.9%	1,319	18.0%
	Hispanic or Latino	1,078	9.8%	1,731	10.7%	677	9.2%
	Other/ Non-hispanic	760	6.9%	1,112	6.8%	465	6.3%
Ruca Group	Rural	729	6.6%	996	6.1%	496	6.8%
	Urban	10,263	92.8%	15,186	93.5%	6,806	92.9%
BMI Group	Not Obese	2,833	25.6%	4,308	26.5%	1,644	22.4%
	Class 1	3,044	27.5%	4,629	28.5%	2,041	27.9%
	Class 2	2,387	21.6%	3,362	20.7%	1,643	22.4%
	Class 3	2,717	24.6%	3,845	23.7%	1,964	26.8%
Has Diabetes	Yes	9,065	82.0%	14,322	88.2%	6,504	88.8%
SVI - Household	[.0, .25]	2,666	24.1%	3,828	23.6%	1,772	24.2%
	[.25, .50]	2,865	25.9%	4,158	25.6%	1,899	25.9%
	[.50, .75]	2,632	23.8%	4,073	25.1%	1,812	24.7%
	[.75, 1.0]	2,785	25.2%	4,071	25.1%	1,781	24.3%
SVI - Transportation	[.0, .25]	1,478	13.4%	2,249	13.8%	1,025	14.0%
	[.25, .50]	2,354	21.3%	3,487	21.5%	1,550	21.2%
	[.50, .75]	3,111	28.1%	4,515	27.8%	2,116	28.9%
	[.75, 1.0]	4,005	36.2%	5,879	36.2%	2,573	35.1%
SVI - Minority Status	[.0, .25]	909	8.2%	1,186	7.3%	581	7.9%
	[.25, .50]	1,953	17.7%	2,900	17.8%	1,384	18.9%
	[.50, .75]	3,595	32.5%	5,255	32.3%	2,454	33.5%
	[.75, 1.0]	4,491	40.6%	6,789	41.8%	2,845	38.8%
SVI - Socioeconomic	[.0, .25]	2,609	23.6%	3,870	23.8%	1,852	25.3%
	[.25, .50]	2,601	23.5%	3,772	23.2%	1,846	25.2%
	[.50, .75]	2,880	26.0%	4,166	25.6%	1,769	24.1%
	[.75, 1.0]	2,858	25.9%	4,322	26.6%	1,797	24.5%

		Subcutaneous Dulaglutide							
		.75 mg		1.5 mg		3 mg		4.5 mg	
Grouping	Group	n	%	n	%	n	%	n	%
Overall	Overall	67,305	100.00%	75,390	100.00%	20,420	100.00%	9,676	100.00%
Sex	Female	37,945	56.38%	40,143	53.25%	10,962	53.68%	5,063	52.33%
	Male	29,360	43.62%	35,247	46.75%	9,458	46.32%	4,613	47.67%
Age Group	18-35	3,035	4.51%	3,181	4.22%	871	4.27%	405	4.19%

	36-50	12,330	18.32%	14,478	19.20%	3,965	19.42%	1,937	20.02%
	51-65	27,275	40.52%	33,107	43.91%	9,064	44.39%	4,479	46.29%
	66-75	17,822	26.48%	18,524	24.57%	5,030	24.63%	2,267	23.43%
	76-85	6,127	9.10%	5,598	7.43%	1,396	6.84%	549	5.67%
	86+	716	1.06%	502	0.67%	94	0.46%	39	0.40%
Race/ Ethnicity	White/ Non-hispanic	42,366	62.95%	49,674	65.89%	13,231	64.79%	6,462	66.78%
	Black/ Non-hispanic	13,993	20.79%	14,632	19.41%	4,046	19.81%	1,805	18.65%
	Hispanic or Latino	7,600	11.29%	7,559	10.03%	2,196	10.75%	991	10.24%
	Other/ Non-hispanic	3,346	4.97%	3,525	4.68%	947	4.64%	418	4.32%
Ruca Group	Rural	4,432	6.58%	4,834	6.41%	1,387	6.79%	780	8.06%
	Urban	62,626	93.05%	70,242	93.17%	18,961	92.86%	8,872	91.69%
BMI Group	Not Obese	17,424	25.89%	17,195	22.81%	4,128	20.22%	1,610	16.64%
	Class 1	18,564	27.58%	20,862	27.67%	5,588	27.37%	2,566	26.52%
	Class 2	14,671	21.80%	17,325	22.98%	4,869	23.84%	2,365	24.44%
	Class 3	16,174	24.03%	19,745	26.19%	5,788	28.34%	3,120	32.24%
Has Diabetes	Yes	63,832	94.84%	72,748	96.50%	19,589	95.93%	9,264	95.74%
SVI - Household	[.0, .25)	14,735	21.89%	16,618	22.04%	4,568	22.37%	2,098	21.68%
	[.25, .50)	17,495	25.99%	19,992	26.52%	5,159	25.26%	2,465	25.48%
	[.50, .75)	16,334	24.27%	18,326	24.31%	5,000	24.49%	2,325	24.03%
	[.75, 1.0]	18,270	27.15%	19,878	26.37%	5,560	27.23%	2,732	28.23%
SVI - Transportation	[.0, .25)	9,019	13.40%	10,602	14.06%	2,624	12.85%	1,188	12.28%
	[.25, .50)	13,941	20.71%	16,003	21.23%	4,216	20.65%	2,091	21.61%
	[.50, .75)	20,059	29.80%	22,317	29.60%	6,061	29.68%	2,870	29.66%
	[.75, 1.0]	23,815	35.38%	25,892	34.34%	7,386	36.17%	3,471	35.87%
SVI - Minority Status	[.0, .25)	5,525	8.21%	6,089	8.08%	1,710	8.37%	877	9.06%
	[.25, .50)	12,450	18.50%	14,259	18.91%	3,888	19.04%	1,967	20.33%
	[.50, .75)	21,554	32.02%	24,856	32.97%	6,688	32.75%	3,231	33.39%
	[.75, 1.0]	27,305	40.57%	29,610	39.28%	8,001	39.18%	3,545	36.64%
SVI - Socioeconomic	[.0, .25)	15,684	23.30%	17,852	23.68%	4,680	22.92%	2,176	22.49%
	[.25, .50)	15,153	22.51%	17,643	23.40%	4,704	23.04%	2,267	23.43%
	[.50, .75)	17,471	25.96%	19,385	25.71%	5,190	25.42%	2,485	25.68%
	[.75, 1.0]	18,526	27.53%	19,934	26.44%	5,713	27.98%	2,692	27.82%

		Subcutaneous Liraglutide			
		.6 mg		3 mg	
Grouping	Group	n	%	n	%
Overall	Overall	93,712	100.00%	22,207	100.00%
Sex	Female	62,004	66.16%	18,563	83.59%
	Male	31,708	33.84%	3,644	16.41%
Age Group	18-35	9,010	9.61%	4,275	19.25%

	36-50	25,693	27.42%	9,344	42.08%
	51-65	37,428	39.94%	7,545	33.98%
	66-75	17,071	18.22%	956	4.30%
	76-85	4,213	4.50%	86	0.39%
	86+	297	0.32%	<10	-
Race/ Ethnicity	White/ Non-hispanic	63,702	67.98%	16,155	72.75%
	Black/ Non-hispanic	17,309	18.47%	3,762	16.94%
	Hispanic or Latino	8,873	9.47%	1,479	6.66%
	Other/ Non-hispanic	3,828	4.08%	811	3.65%
Ruca Group	Rural	7,030	7.50%	1,232	5.55%
	Urban	86,314	92.11%	20,800	93.66%
BMI Group	Not Obese	13,407	14.31%	1,621	7.30%
	Class 1	23,045	24.59%	5,377	24.21%
	Class 2	22,617	24.13%	5,963	26.85%
	Class 3	34,290	36.59%	9,193	41.40%
Has Diabetes	Yes	70,266	74.98%	3,653	16.45%
SVI - Household	[.0, .25)	20,571	21.95%	5,775	26.01%
	[.25, .50)	24,376	26.01%	6,021	27.11%
	[.50, .75)	22,722	24.25%	5,081	22.88%
	[.75, 1.0]	25,364	27.07%	5,104	22.98%
SVI - Transportation	[.0, .25)	12,833	13.69%	3,906	17.59%
	[.25, .50)	20,218	21.57%	5,414	24.38%
	[.50, .75)	27,150	28.97%	6,523	29.37%
	[.75, 1.0]	32,832	35.04%	6,138	27.64%
SVI - Minority Status	[.0, .25)	8,585	9.16%	1,903	8.57%
	[.25, .50)	19,002	20.28%	4,857	21.87%
	[.50, .75)	30,914	32.99%	7,761	34.95%
	[.75, 1.0]	34,532	36.85%	7,460	33.59%
SVI - Socioeconomic	[.0, .25)	23,068	24.62%	6,633	29.87%
	[.25, .50)	22,576	24.09%	5,550	24.99%
	[.50, .75)	23,450	25.02%	5,512	24.82%
	[.75, 1.0]	23,939	25.55%	4,286	19.30%

Table 2: Median Weight Loss After One Year by Peak Dosage

Months Since Stopping	Tirzepatide 5 mg	Tirzepatide 10 mg	Tirzepatide 15 mg	Semaglutide Inj 1 mg	Semaglutide Inj 1.7 mg	Semaglutide Inj 2 mg	Semaglutide Inj 2.4 mg
0	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1	0.974	0.968	0.968	0.983	0.977	0.983	0.976
2	0.961	0.947	0.945	0.975	0.962	0.974	0.961
3	0.955	0.931	0.926	0.970	0.948	0.967	0.947
4	0.946	0.919	0.903	0.964	0.934	0.958	0.932

5	0.940	0.907	0.887	0.961	0.927	0.953	0.918
6	0.939	0.899	0.873	0.960	0.926	0.951	0.912
7	0.933	0.893	0.864	0.957	0.923	0.946	0.904
8	0.925	0.880	0.847	0.956	0.929	0.942	0.902
9	0.925	0.873	0.847	0.955	0.933	0.943	0.903
10	0.920	0.862	0.840	0.955	0.931	0.941	0.903
11	0.920	0.872	0.846	0.953	0.939	0.940	0.899
12	0.914	0.868	0.850	0.955	0.940	0.941	0.900

Months Since Stopping	Semaglutide Oral 3 mg	Semaglutide Oral 7 mg	Semaglutide Oral 14 mg	Liraglutide 0.6 mg	Liraglutide 3 mg
0	1.000	1.000	1.000	1.000	1.000
1	0.993	0.990	0.990	0.989	0.979
2	0.991	0.985	0.984	0.987	0.972
3	0.991	0.983	0.980	0.987	0.973
4	0.989	0.979	0.975	0.986	0.971
5	0.988	0.977	0.972	0.985	0.968
6	0.988	0.978	0.971	0.984	0.968
7	0.986	0.976	0.968	0.984	0.966
8	0.984	0.974	0.969	0.984	0.964
9	0.984	0.973	0.968	0.984	0.963
10	0.983	0.971	0.965	0.984	0.964
11	0.983	0.972	0.965	0.983	0.963
12	0.982	0.972	0.962	0.983	0.964

Months Since Stopping	Dulaglutide 0.75 mg	Dulaglutide 1.5 mg	Dulaglutide 3 mg	Dulaglutide 4.5 mg
0	1.000	1.000	1.000	1.000
1	0.992	0.991	0.992	0.992
2	0.989	0.989	0.988	0.989
3	0.988	0.987	0.986	0.987
4	0.986	0.985	0.984	0.984
5	0.985	0.983	0.982	0.982
6	0.985	0.983	0.982	0.980
7	0.984	0.982	0.980	0.979
8	0.982	0.982	0.979	0.978
9	0.981	0.981	0.979	0.977
10	0.980	0.980	0.978	0.975
11	0.981	0.980	0.977	0.975
12	0.980	0.979	0.977	0.975